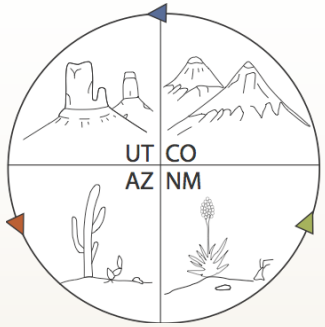

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ENVIRONMENTAL SERVICES
Durango ▪ Cortez ▪ Pagosa Springs ▪ Farmington

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RECD. FEB 09 2009

BLM and CEC Staff Workshop
SES Solar Two Project

Cumulative and Alternatives Analysis

Agenda

- Introductions
- Cumulative Impact Analysis Approach
- Alternative Development and Analysis
- Round-table Discussion
- Action Items and Schedule

Cumulative Impacts Analysis

- What Are Cumulative Impacts?
- Cumulative Analysis Approach
- Agency Definitions
- Defining Analysis Areas
- Defining Past, Present and Future Actions
- Criteria for Determining “cumulatively considerable” or “significant” effect
- Approach Demonstrations
  - Socioeconomics
  - Visual
  - Biological

Cumulative Impacts

- **What Are Cumulative Impacts?**
  - Additive or interactive impacts resulting from the incremental effect of the Project when added to past, present and **reasonably foreseeable** future actions
  - Reasonably foreseeable future actions or effects are those likely (or reasonably certain) to occur within the time frame used for the impact analysis

Cumulative Impacts Approach

- Define the geographic scope of cumulative impact analysis for each discipline
- Evaluate project effects in combination with past and present (existing) projects
- Evaluate the effects of the project combined with foreseeable future projects that occur within the area of geographic effect defined for each discipline

Cumulative Impacts Issues

- Defining geographic and temporal scope of project effects by resource
- Identifying development and projects to consider as past, present, and reasonably foreseeable future actions
- Determining the magnitude of effects from past, present, and reasonably foreseeable future development

What Is Cumulatively Considerable?

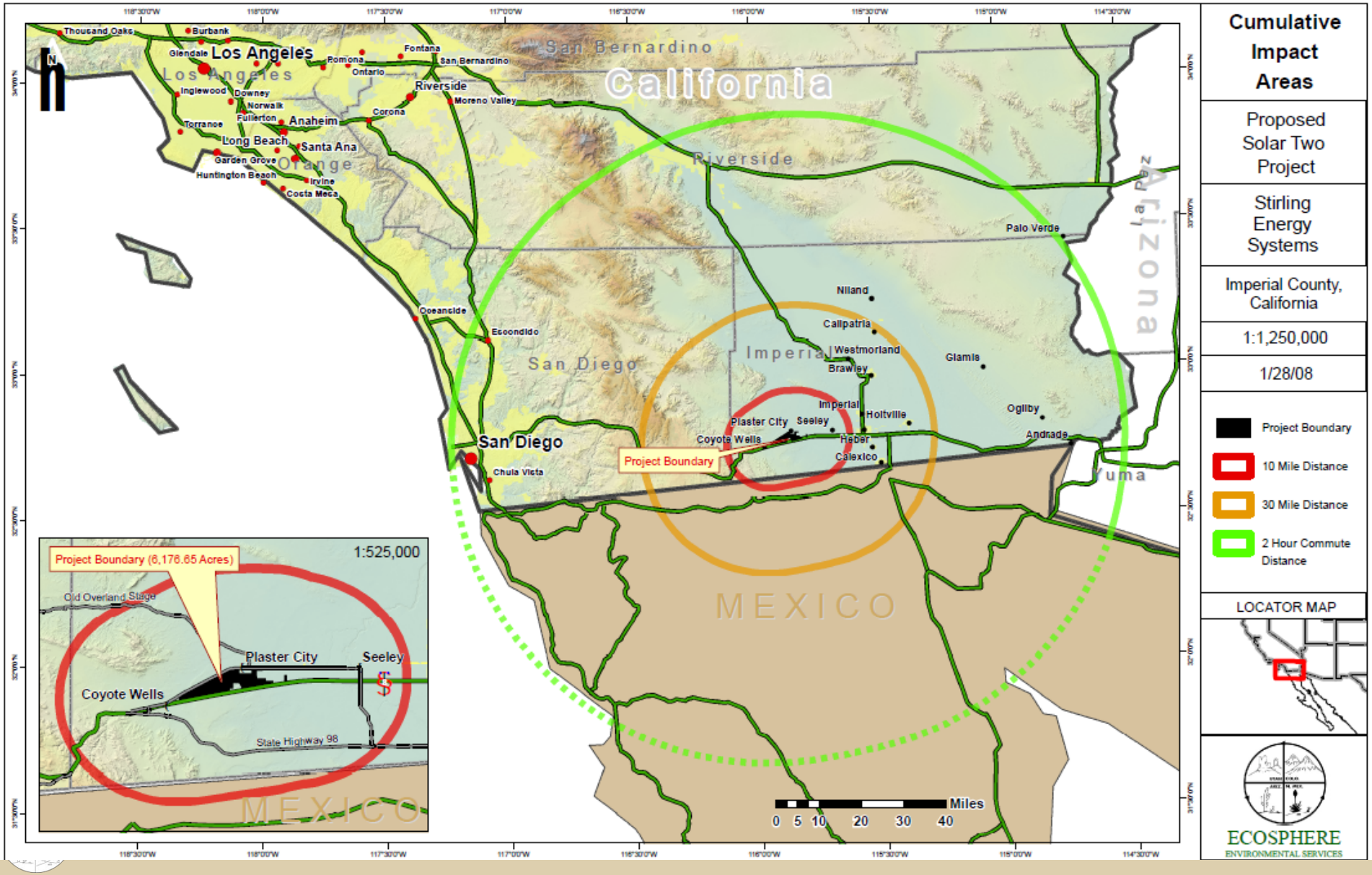
- **COMMITTEE ORDER RESPONDING TO CURE'S MOTION TO COMPEL PRODUCTION OF INFORMATION Carrizo Energy Solar Farm 12/08**
- Finding: The CEC determined that the CEC staff and the applicant must evaluate the cumulative impacts of at least the 14-square mile accumulation of possible solar projects.
  - "To properly conduct our cumulative impact analysis the Committee must first determine if the combined effects of these projects would be cumulatively significant."
  - "If the answer is yes, we must then determine whether the incremental effects of the CESF are 'cumulatively considerable."

Reasonably Foreseeable Future Actions

- **Identifying Viable RFD to be Considered**:
  - Probability of future development
    - Status of permissions
    - Funding
    - Constraints (transmission line access, cultural, etc.)
  - Impacts from future development
    - Significant impacts?
    - Level of mitigation
    - Unmitigated effects
    - Interaction between resource effects

Socioeconomic Analysis

- Cumulatively Considerable Effects
  - Direct impacts – employment
  - Indirect impacts – population, housing, income, boom/bust and way of life
- Affected Area
  - Two-hour worker commute
- Reasonable Foreseeable Development
  - Other projects that require specialized skilled workers (renewable energy, transmission lines)


Cumulative Impact Areas
Proposed Solar Two Project
Stirling Energy Systems
Imperial County, California
1:1,250,000
1/28/08
Project Boundary
10 Mile Distance
30 Mile Distance
2 Hour Commute Distance
LOCATOR MAP
ECOSPHERE
ENVIRONMENTAL SERVICES
Project Boundary (6,176.65 Acres)
1:525,000
Old Overland Stage
Plaster City
Seeley
Coyote Wells
State Highway 98
MEXICO
Miles
0 5 10 20 30 40
San Diego
Imperial
Riverside
San Bernardino
Orange
Los Angeles
California
Arizona
Yuma
Palo Verde
Niland
Calipatria
Westmorland
Brawley
Imperial
Holtville
Ogilby
Andrade
Calexico
Heber
Seeley
Plaster City
Coyote Wells
San Diego
Chula Vista
Oceanside
Escondido
Project Boundary
Thousand Oaks
Burbank
Glendale
Los Angeles
Pomona
Fontana
San Bernardino
Ontario
Riverside
Moreno Valley
Corona
Inglewood
Downey
Norwalk
Fullerton
Anaheim
Torrance
Long Beach
Santa Ana
Garden Grove
Huntington Beach
Irvine
Costa Mesa

Visual Resources Cumulative Analysis

- Significant or "Cumulatively Considerable Effects?"
  - Does the project's degree of change meet BLM guidelines for VRM/VRI classes?
    - Need VRM/VRI classifications
    - Need Visual Impact Assessment (contrast rating sheets, etc.)
  - Does CEC Scenic Resource Evaluation indicate significant changes?
- Geographic
  - Identify cumulative area of effect through viewshed mapping
- Temporal
  - Map current and future disturbances in project viewshed area and overlap viewshed profiles
  - Does the addition of the project to the viewshed in concert with current and future disturbance meet existing VRM/VRI?

Biological Resources

Flat-tailed horned lizard

- **Area of potential effect** – geography, potential habitat, and defined management areas (ACEC) for the lizard
- **Temporal:** Past, present, & RFAs within geographic boundaries
- **Significance Criteria:** Percentage of acres of habitat affected by past, present, and future actions in comparison with proposed action

Alternative Development and Analysis

- **CEC and BLM Alternatives Analysis Needs**
  - CEC/CEQA Requirements
  - BLM/NEPA Requirements
  - What's been done to date & how this addresses agency needs

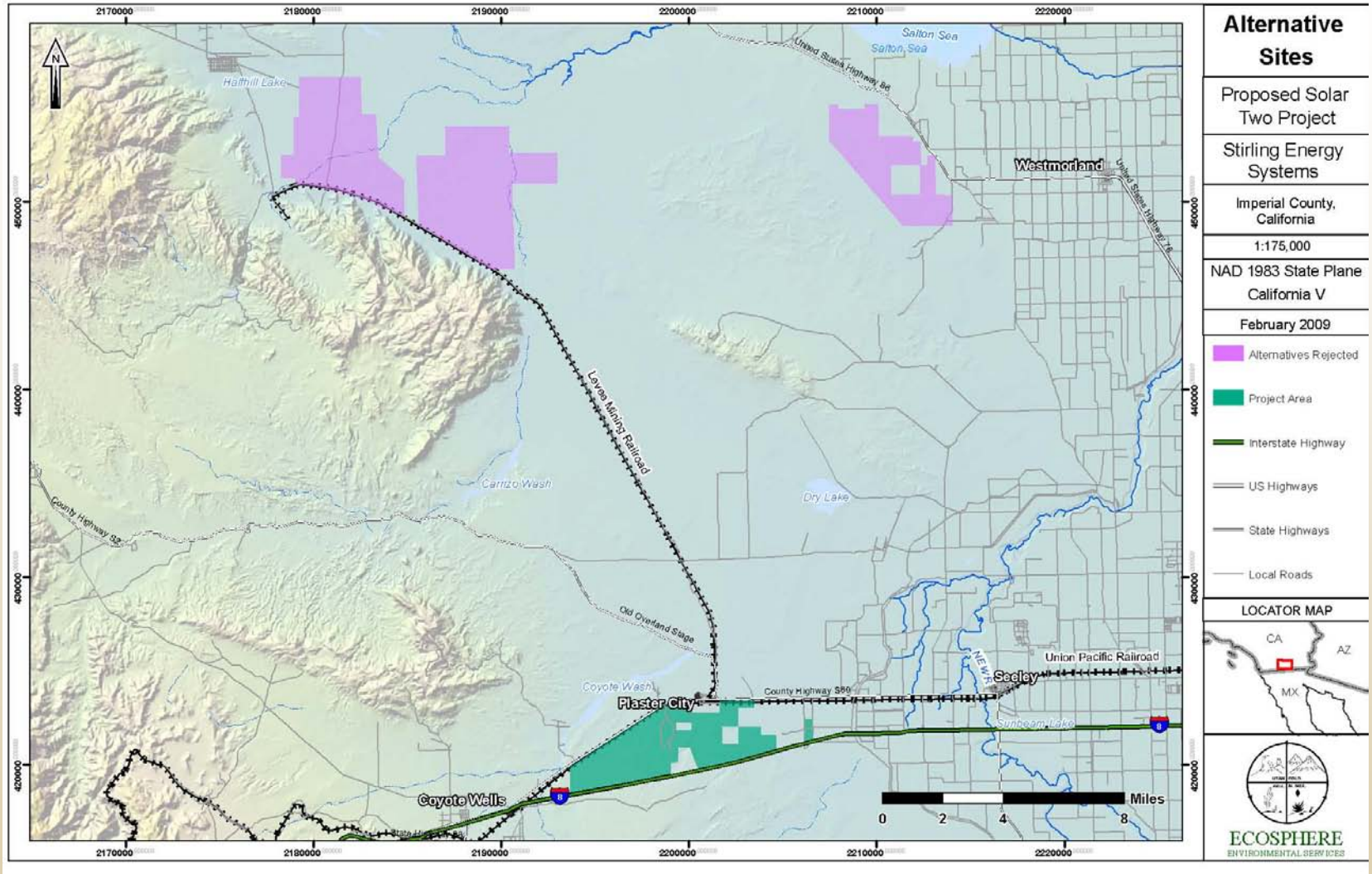
- **SES Solar II Purpose and Need –** meeting legislated energy goals

- **Siting Criteria**
  - Solarity
  - Land Area
  - LORS
  - Topography
  - Site Control
  - Cost
  - Wind Speed
  - Infrastructure
  - Environmentally Sensitive

- **Options Considered But Eliminated**
- **Viable Alternatives**
- **Land Use Classification Amendment**

Options Considered But Eliminated

- **Alternate Site 1 (Western)** – removed due to sensitive species, restricted airspace, cultural, hydrology concerns.
- **Alternate Site 2 (Northern)** – near Salton Sea, removed due to sensitive species and insufficient contiguous acreage.
- **Mesquite Lake -** removed due to less than 6000 acres of available land, would not meet the purpose and need, not consistent with LORS, significant adverse impacts to adjacent land uses.
- **Wind Zero site –** removed since it does not have sufficient acres to meet the purpose and need.


Alternative Sites
Proposed Solar Two Project
Stirling Energy Systems
Imperial County, California
1:175,000
NAD 1983 State Plane California V
February 2009
Alternatives Rejected
Project Area
Interstate Highway
US Highways
State Highways
Local Roads
LOCATOR MAP
CA
AZ
MX
ECOSPHERE
ENVIRONMENTAL SERVICES
Salton Sea
Westmorland
Halfhill Lake
Carrizo Wash
Dry Lake
Coyote Wash
Plaster City
Seeley
Union Pacific Railroad
Coyote Wells
Sunbeam Lake
Miles
0
2
4
8
2170000
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2190000
2200000
2210000
2220000
450000
440000
430000
420000

Solar Two Example Alternatives

- No Action
- Preferred Alternative (750 MW – Excluding Cultural and ACEC areas [Alternative 3])
- 300 MW (Phase I only)
- Full-footprint Proposal (900 MW)

All Alternatives except No Action Would Require Land Use Plan Amendment

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Land Use Class Amendment

- California Desert Conservation Plan (CDCP) Land Use Class Amendment
  - Currently SES Solar Two site is Class L (Limited)
  - Amendment will likely be required for solar energy
  - Change to Class I (Intensive)
- BLM will use Solar Two EIS to support Land Use Plan Amendment

Round-Table Discussion

- Is the proposed cumulative analysis methodology consistent with CEC/CEQA/NEPA?
- Guidance on the process for specifying alternatives
- Guidance on process for incorporating BLM Land Use Amendment into Alternatives
- Guidance on process for addressing cross-border impacts and development

Action Items

- Refine Cumulative Impacts Analysis and Alternatives to SES Solar Two Based on CEC/BLM Guidance
- Respond to Data Requests
- Other Discussion Needs?

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ENVIRONMENTAL SERVICES

KAREN CADDIS

SENIOR PROJECT MANAGER/NATURAL RESOURCES SPECIALIST

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QUALIFICATIONS SUMMARY

Karen Caddis is an environmental permitting and compliance specialist with over 25 years of NEPA, ESA, CWA, biology, visual resource analysis, botany, wetlands delineation, and project management experience. She also has expertise in special status wildlife and plant species surveys, and resource development plan preparation and review. Prior to joining Ecosphere, she served as a project manager and field biologist/environmental coordinator for ENSR/AECOM, a large environmental consulting firm. Key areas of expertise include:

- Environmental Permitting and Compliance Preparation, Evaluation, Implementation, and Monitoring
- Resource Development Plan Preparation and Review
- Coordination and Management of Multidisciplinary Environmental Plans and Programs
- Biological, Visual, and Environmental Field Studies Coordination and Implementation
- Wetland Delineation, Mitigation, and Section 404 Permitting
- Special Status Wildlife and Plant Species Surveys

EDUCATION, TRAINING & PROFESSIONAL AFFILIATIONS

B.S., Natural Resource Management ▪ Cum laude▪ Colorado State University ▪ Fort Collins, CO ▪ 1987 ▪

B.A., Physical Geography and Journalism (Anthropology minor) ▪ Cum laude ▪ Eastern Washington University ▪ Cheney, Washington ▪ 1980

BLM Visual Resource Management Training: San Juan Public Lands Office, Colorado, and Farmington, New Mexico

U.S. Army Corps of Engineers Wetland Delineation Training

USFWS Certified to Conduct Desert Tortoise, Spotted Owl, and Black-Footed Ferret Surveys

PROFESSIONAL HISTORY

ENVIRONMENTAL SPECIALIST, ECOSPHERE ENVIRONMENTAL SERVICES ▪ DURANGO, CO ▪ 2007 – PRESENT

- Joined the firm in spring 2007 to serve as a project manager and lead environmental specialist.
- Specialty areas: visual resources, vegetation, wetland and riparian, sensitive species evaluations.

PROJECT MANAGER/FIELD BIOLOGIST/ENVIRONMENTAL COORDINATOR, ENSR/AECOM ▪ FORT COLLINS, CO ▪ 1986 TO 2007

- Participated and led a wide variety of projects: visual resources analysis, wetlands delineations, permitting, biological studies, monitoring, etc.

REPRESENTATIVE PROJECT EXPERIENCE

Southern Ute Indian Tribe and Bureau of Land Management, Programmatic Oil and Gas Development EIS, Colorado and New Mexico.

Visual resources task specialist for a programmatic oil and gas development EIS on Southern Ute lands in southwest Colorado and northwest New Mexico. Project involved developing a visual resources impacts analysis process for the Southern Utes and applying it to the project area, an approximately 100 mile by 80 mile area. Prepared viewshed analysis for the area, identified key observation points, conducted impacts assessment, and developed mitigation strategies for impact reduction.

Kinder Morgan and Bureau of Land Management, Goodman Point Carbon Dioxide Exploration Well EA Project, Canyons of the Ancients National Monument, Colorado.

Visual resources task specialist for a carbon dioxide exploration well program located within the boundaries of Canyons of the Ancients National Monument. The project involved completing viewshed analysis, confirming Visual Resources Inventory classifications for the Monument, identifying key observation points, conducting sensitivity level assessments, scenic quality rating and contrast rating analysis, preparation of a visual resources assessment report, and development of mitigation measures to reduce effects to visual resources. This project was one of the first gas well developments proposed since creation of the Monument and some of the major issues involved maintaining the values that the Monument was created to protect, while allowing development of pre-existing gas exploration leases.

Grandview Quarry and Bureau of Land Management, Quarry Expansion Project EA, Durango, Colorado.

Visual resources task specialist for expansion of an existing gravel quarry near a popular recreation area south of Durango, Colorado. Project tasks involved using BLM visual resource analysis techniques, including identification of key observation points, preparation of a viewshed analysis, completion of contrast rating sheets, and development of mitigation to reduce visual effects from the expansion.

Bill Barret Corporation and Bureau of Land Management, Torrey Pines Seismic Project EA, Nucla, Colorado.

Visual resources task specialist for a proposed seismic oil and gas project located near Nucla, Colorado. Project involved confirmation of existing VRM classes, identification of key observation points, integration of BLM viewshed analysis, completion of contrast rating sheets, and mitigation development to reduce effects to visual resources.

Luz Development and Finance Corp. and Bureau of Land Management (BLM), SEGS VIII Mitigation Implementation and Compliance, California.

Task manager and field biologist responsible for sensitive species clearance surveys and construction monitoring for the LSP VIII 230-kilovolt transmission line between the Harper Lake solar energy farm and Kramer Junction, California. Monitoring of construction activities was conducted in accordance with the BLM Right-of-Way Grant, the U.S. Fish and Wildlife Service Biological Opinion, and the California Energy Commission Conditions of Certification. Coordinated compliance procedures between construction contractor and agency personnel during the 2-month construction schedule.

Sempra Generation and Bureau of Land Management, Granite Fox Power Project, EIS Baseline Studies and Permitting Compliance, Nevada and California.

Assistant NEPA manager and field biologist/coordinator for environmental studies and permitting compliance for a proposed coal-fired power plant site located in northwestern Nevada. Site components including the power plant site, rail line, transmission lines and construction power lines, waterlines and wellfields, ground electrode site, coal combustion waste disposal area, an ash conveyor system, and

associated ancillary facilities such as haul roads are proposed for location over a 40-mile long area. Studies included evaluating over 280 seep and spring complexes, vegetative communities, wetland delineations across statelines, surveys for federally listed plant and wildlife species, and preparing documentation in support of a pending EIS.

National Environmental Policy Act Permitting Projects, Various Locations Throughout the West.

Project manager, project coordinator, biological, cultural and visual technical specialist for various third-party EIS and EA projects around the West, including:

- *Andalex Resources, Inc., BLM and OSM, Warm Springs Underground Coal Mine EIS, Utah.*
- *Lost Creek Oil and Gas Company and BLM, Oil and Gas Pipeline Project EIS, Wyoming.*
- *U.S. Air Force Academy, Programmatic Military Base and Airfield Environmental Assessments, Colorado.*
- *Tri-State Generation and Transmission Association, Inc., Rural Utility Service (RUS) of the U.S. Department of Agriculture, and Bureau of Land Management, Pyramid Generating Station Project Environmental Assessment (EA), Tri-State, Lordsburg, New Mexico.*
- *Williams and U.S. Army Corps of Engineers, Wanapa Generating Station EIS, Hermiston, Oregon.*
- *Bureau of Land Management, Ely Resource Management Plan EIS, Nevada*.
- *U.S. Air Force, Alaskan Military Training Route Environmental Assessment (EA), Alaska*.
- *Alta Gold Company and Bureau of Land Management, Copper Flat Mine Project Environmental Impact Statement (EIS), New Mexico.*
- *Brohm Mining Corp. and U.S. Forest Service, Gilt Edge Mine, Anchor Hill Expansion Project Environmental Impact Statement (EIS), South Dakota.*
- *Cobre Mining Company, Inc., Phelps-Dodge Mining Company, and Bureau of Land Management, Continental Mine Environmental Impact Statement (EIS) and Environmental Assessment (EA), New Mexico.*
- *Florida Canyon Mining Company and Bureau of Land Management, Florida Canyon Mine Expansion Environmental Impact Statement (EIS), Nevada.*
- *Glamis Mining and Minerals Company and Bureau of Land Management, Rayrock/Marigold Mine, Expansion Environmental Impact Statement (EIS), Nevada*.
- *Homestake Mining Company of California and Bureau of Land Management (BLM), Ruby Hill Project Environmental Impact Statement (EIS), Nevada.*
- *Ivanhoe Gold Company and Bureau of Land Management, Ivanhoe Gold Mine Expansion Project Environmental Impact Statement (EIS), Nevada*.
- *Montana Department of Environmental Protection, Bureau of Land Management (BLM), and Golden Sunlight Mine, Inc., Golden Sunlight Project Environmental Impact Statement (EIS), Montana*.
- *Newmont Mining Corporation and Bureau of Land Management (BLM), Phoenix Project Environmental Impact Statement (EIS), Nevada.*
- *Placer, Inc., Bureau of Land Management, and Nevada Division of Wildlife, Alligator Ridge Gold Mine Expansion Project Environmental Impact Statement (EIS), Nevada.*

- *Inland Resources, Inc./Newfield Rocky Mountains, Inc. and Bureau of Land Management, Castle Peak and Eightmile Flat Oil Expansion Project, Environmental Impact Statement (EIS), Vernal, Utah.*
- *Questar Gas Management and Bureau of Land Management, Buck Canyon-Seep Ridge Pipeline Environmental Assessment, Utah.*
- *Questar, Williams, Kern River, U.S. Forest Service (USFS) and Bureau of Land Management (BLM), QWK Pipeline Project Environmental Impact Study (EIS), New Mexico, Colorado, and Utah.*
- *Resource Development Group and Bureau of Land Management, Freedom Project Environmental Assessment (EA), Utah.*
- *Williston Basin Incorporated, BLM, and Federal Energy Regulatory Commission (FERC), Grasslands Pipeline Project Environmental Impact Statement (EIS), Wyoming, Montana, and North Dakota.*
- *Bureau of Land Management (BLM) and Uintah and Grand Counties Special Districts, Cisco to Ouray Highway (U.S. 191) Environmental Impact Statement (EIS), Utah.*
- *Bureau of Land Management and Federal Aviation Administration, Ivanpah Airport Project EIS, Las Vegas, Nevada.*

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ENVIRONMENTAL SERVICES

CAROLYN DUNMIRE

SENIOR PROJECT MANAGER/NATURAL RESOURCES ECONMIST

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QUALIFICATIONS SUMMARY

Carolyn Dunmire has over 20 years of experience conducting and managing economic, technical, and market analyses related to natural resources policies and decisions. She has worked all over the world researching and developing forecasting tools for resource allocation and valuation. Her recent project focus has been analyzing renewable energy options including wind and solar project in the Western US and rural Alaska. She also analyzed energy supply alternatives for Cook Inlet, Alaska where depleted natural gas resources are driving new energy supply options. Ms Dunmire conducts socioeconomic impact analyses and natural resource valuation studies particularly for proposed actions related to fluid mineral development on public lands. Recently, she has worked on the BLM Canyons of the Ancients, Roan Plateau, and Jarbidge Field Office RMP/EIS projects as well as environmental and planning studies for wind, solar, and biomass energy developments.

Ms Dunmire's previous employment highlights include: President of Forest Energy Systems, where she led product development, sales, and marketing for a biomass energy start-up company. As a senior associate at Hagler Bailly, she headed projects on utility resource planning with environmental externality issues, externality valuation, global climate change policy analysis, estimating impacts on utilities and utility regulation of environmental and global climate change legislation and least-cost utility planning issues. Ms. Dunmire has developed several computer-based models for externality valuation including the first global overlay model for estimating greenhouse gas emissions for Global Environment Facility projects, utility supply and demand forecasting, transportation demand, and resource valuation. She also interned at the Electric Power Research Institute (EPRI) developing a computer model for estimating prices tradeable emissions permits for electric power sources.

EDUCATION, TRAINING & PROFESSIONAL AFFILIATIONS

M.S. Engineering-Economic Systems, Stanford University, 1989

B.S. Chemical Engineering, University of Colorado, 1983

PROFESSIONAL HISTORY

Senior Project Manager and Natural Resource Economist, Ecosphere Environmental Services, Durango Colorado, 2009 to present
Senior Natural Resource Economist and Planner, Walsh Environmental Scientists and Engineers, LLC, Boulder, CO, 2007 to 2009
President, Forest Energy Systems, Show Low, AZ 2006-2007
Technical Consultant, Dunmire Consulting, Cahone, CO, 1996-2006
Senior Associate, Hagler Bailly Consulting, Boulder, CO, 1989-1996
Research Assistant, Electric Power Research Institute, Palo Alto, CA, 1988-1989

REPRESENTATIVE PROJECT EXPERIENCE

NEPA Planning and Compliance

Ms. Dunmire conducts socioeconomic analysis for NEPA studies related to energy development in the West where boom/bust cycles and rural economic development are key issues.

BLM: RMP/EIS ROAN PLATEAU, COLORADO

Ms. Dunmire provided a socioeconomic impact analysis of proposed actions related to fluid mineral development on public lands in the Four Corners area. She gathered data, developed social and economic baselines for the Planning Area, and analyzed potential economic and social impacts related to proposed actions or alternatives. She also summarized and responded to public comments on this analysis and participated in public forums. Her work on the RMP/EIS for Roan Plateau was commended by BLM Glenwood Springs Field Office.

BLM: RMP/EIS CANYONS OF THE ANCIENTS NATIONAL MONUMENT

Ms. Dunmire conducted the socioeconomic analysis for this RMP/EIS for a new national monument. She completed the analysis and drafted the affected environment and impact analysis for potential economic and social effects. For this analysis, she collected and analyzed State, local, and regional demographic and economic data to quantitatively and qualitatively estimate the socioeconomic aspects of proposed management actions. Additionally, Ms. Dunmire interviewed and consulted with local government and tribal leaders to calibrate and confirm potential impacts and the extent to which local and regional populations (especially minorities) could be affected by management actions on public lands. Key issues for this RMP/EIS include grazing, fluid mineral development, and recreation/transportation management in an area with the highest density of cultural resources in the U.S.

BLM: RMP/EIS IMPACT ANALYSIS FOR BUFFALO FIELD OFFICE, WYOMING

Ms. Dunmire conducted the social, economic, and environmental justice impact analysis of BLM management actions related to fluid mineral development in the Fortification Creek area of the Buffalo FO. The impacts measured by the assessment include changes to population, employment, income, as well as non-market values for wildlife and sagebrush steppe.

BLM: RMP/EIS JARBIDGE FIELD OFFICE, IDAHO

Ms. Dunmire is directing the socioeconomic analysis for an update of the RMP/EIS for BLM lands managed by the Jarbidge Field Office. She is coordinating efforts by professors at University of Nevada-Reno to conduct IMPLAN modeling of the surrounding communities to estimate impacts to changes in rangeland and recreational management actions as well as incorporating survey results to estimate potential social impacts associated with proposed management actions.

BLM/SOUTHERN UTE TRIBE: PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR FLUID MINERAL DEVELOPMENT

Ms. Dunmire analyzed the potential social and economic impacts to the Southern Ute Tribe and surrounding community associated with 80-acre in-fill for coalbed methane development on Southern Ute Tribal lands. This PEA is being tiered from the recently completed PEA for 160-acre CBM development. Her analysis included examining the cumulative impact of increased well density on traditional use of Tribal resources as well as social and economic impacts associated with on-going CBM development on Tribal and local governments and social services.

Wind Project Development in Southern Colorado

Ms. Dunmire collected demographic and economic data and developed a socioeconomic baseline and forecast for Huerfano County, Colorado in support of future wind project development in the county. This analysis was used to support the successful approval of the application to the county for development of a wind farm and transmission line.

County Planning Approval for Oil and Natural Gas Development in Four Corners

Ms. Dunmire maintains an extensive demographic and economic data base for the Four Corners (Colorado, Utah, New Mexico, and Arizona) that she uses to analyze the impacts of energy development in the region on local communities. She evaluates the impacts of traffic, employment, temporary housing, and boom/bust economic development on the local communities considering energy development in their jurisdiction. Her analysis is used in planning and permit applications.

EIS for proposed Cottonwood Power Station, Navajo Reservation New Mexico

Ms. Dunmire analyzed the potential social and economic impacts to the Navajo Nation and surrounding community associated the development of a 500 MW coal-fired power station on Navajo lands in New Mexico. For this analysis, she examined extensive demographic data to determine economic impacts on Navajo Nation and local communities. She also conducted interviews of Navajo and other community leaders to determine the potential social impacts associated with the power plant development.

Socioeconomic Analysis for ESIAs for Oil and Gas Development Projects Internationally, Occidental Petroleum and Other Private Clients

Ms Dunmire developed the baseline social assessment for ESIA considering expansion of oil field development in Yemen where poverty, human rights, and gender issues are predominant. In addition, she identified and evaluated stakeholder risks and mitigation measures for the project.

Energy Resource Planning

Energy Supply Scenarios Analysis, Alaska Natural Gas Development Authority

Ms. Dunmire designed and analyzed five scenarios for future energy supply options for Cook Inlet or the Railbelt area of Alaska. For each of the scenarios, she estimated annual household energy bills (natural gas and electric) from 2005 to 2025. This analysis was included in the market analysis included in ANGDA's application to the Alaska Gas Inducement Act program.

Energy Alternatives Study, Alaska Natural Gas Development Authority

Ms. Dunmire conducted an analysis of the energy alternatives that could be used to fill the potential natural gas shortfall caused by depleted natural gas reserves in Cook Inlet. She investigated over 25 different energy options from clean coal technologies to renewable energy (wind, hydro, geothermal) and energy conservation. These alternatives were ranked against eight criterion including energy services, environmental impacts, and changes to customer's monthly bills. Ms. Dunmire presented her results at the Alaska Oil and Gas Conservation Commission's 2006 South Central Alaska Energy Forum.

Renewable Energy Alternatives Study for Native Alaskan Villages, Lake and Peninsula Borough, Southwestern Alaska

Ms. Dunmire completed a study that is being used to identify and fund renewable energy options for remote native villages in the Lake and Peninsula Borough. She advanced a new approach to energy resource decision-making for remote areas that considers both supply and demand-side options as well as the feasibility of implementing alternative energy technologies in communities with restricted fuel transportation and operator training opportunities.

Environmental Externalities And Utility Planning, Empire State Electric Energy Research Corporation (ESEERCO)

Ms. Dunmire was deputy project manager for this three year, $1.3 million study to develop a valuation model for environmental externalities related to fuel cycle, energy production, and waste disposal for each major type of electric generation resource in New York including fossil-fired, nuclear, hydro, and demand-side management. Ms. Dunmire provided technical expertise in the characterization and impact identification of electric power resources. Some of the tasks that she coordinated during this study included surveying existing literature for each externality endpoint and determining whether damages could be quantitatively or qualitatively estimated, and developing a methodology for estimating externality values with a damage function approach. Ms. Dunmire also conducted the research for estimating externality values for greenhouse gas emissions.

Externality Policy Development Project – Energy And Transport Sectors, Department Of Energy And Minerals, Victoria, Australia

Ms. Dunmire was project manager for the energy sector portion of this comprehensive study of externality valuation and policy alternatives for energy use and development decisions in Victoria. Ms. Dunmire researched and derived externality values for the environmental and social impacts related to a wide variety of energy resources and transport scenarios. She also developed recommendations for externality policies that can be used to apply these externality values in state policy decisions. During this project, Ms. Dunmire spent eight weeks in Victoria managing the subconsultant work and completing key technical tasks.

Air Quality Valuation Model, Environment Canada And Health Canada

Ms. Dunmire was the project manager for the development of a computer model that is used by the Canadian government to analyze and predict the benefits of changing air quality in any location in Canada. The model includes benefits such as reduced numbers of health effects, improved visibility, and improved environmental resource quality. Benefits are quantified with economic valuation techniques included in the model and results are reported annually.

Environmental Economics Workbook, Asian Development Bank

Ms. Dunmire is one of the primary authors of the environmental economics workbook for ADB loan officers and staff to assist in the evaluation of environmental impacts in project evaluation. She authored the case study and analysis techniques for the power and energy sector. She analyzed existing valuation methods and externality estimates for power and energy projects worldwide to develop transfer methods for use in ADB project evaluations.

Carbon Mitigation and Planning

Carbon Mitigation Strategies for Natural Gas Pipeline

Ms. Dunmire identified and evaluated a variety of mitigation options to offset the potential greenhouse gas emission for a proposed natural gas pipeline project. Some of the options evaluated included pipeline equipment efficiency and operation measures, carbon sequestration through tree-planting in the pipeline corridor and carbon offset purchase.

Energy Options Study and Greenhouse Gas Emissions Model for Ukraine, The World Bank

Ms. Dunmire designed and developed the first global overlay model for greenhouse gas analysis of Global Environment Facility projects. This computer model identifies and analyzes the greenhouse gas emissions reduction achievable by a range of energy sector projects. In this analysis for Ukraine, she used the overlay model to forecast baseline energy consumption by fuel type and to analyze potential fuel savings and greenhouse gas emissions reductions achieved by proposed projects such as coalbed methane recovery, residential natural gas metering, and district heating thermal upgrade programs. Ms. Dunmire

interviewed government officials and World Bank representatives in Ukraine to gather data for the project.

Carbon Taxes And World Bank Energy Projects, The World Bank

Ms. Dunmire was the lead technical consultant for this study to examine the impact of $5 to $40 per ton carbon tax on the economic viability of a range of recent World Bank energy projects. The analysis focused on greenhouse gas emissions directly attributed to the project and how the cost benefit analysis for the project would change if a carbon tax were included. Ms. Dunmire directed the effort to estimate greenhouse gas emissions for a wide range of projects including power generation, district heating, rural electrification, energy efficiency, oil and gas production, and transmission and distribution.

Evaluation of Using Benchmarks, U.S. EPA, Climate Policy and Programs Division

In this evaluation, Ms. Dunmire led the analysis of case studies to determine how different benchmarks would perform in satisfying the additionality criteria for joint implementation and clean development mechanism projects. She identified and analyzed existing and proposed joint implementation projects as well as developed a range of benchmarks used in the evaluation.

GHG Mitigation Assessment Training for South Africa, u.s. Country studies program

Ms. Dunmire led the training on GHG mitigation during a workshop on climate change for South African government officials and scientists. She did an introduction presentation on tools for economic and financial analysis of GHG mitigation and adaptation strategies and led a two-day workshop on mitigation assessment. She also met with delegates from other southern African countries on GHG mitigation assessment and modeling approaches.

Resource Planning, Market Analysis, and Forecasting

Marketing Assistance for Small Diameter Wood Products, Four Corners Sustainable Forest Partnership

Ms. Dunmire was the marketing coordinator for this 5-year program to provide marketing assistance to over 20 different businesses throughout the Four Corners region in the forestry and wood products industry. For this project, she has evaluated the marketing needs for a wide range of businesses and coordinated the assistance provided by the Partnership. In addition, she conducted market research for commercial pelletized fuel applications and survey supplies. Ms. Dunmire has also coordinated the budget and final report of marketing achievements supported by this project.

National E-Waste Study, Silicon Valley Toxics Coalition/Computer TakeBack Campaign

Ms. Dunmire developed and maintains a simulation model to estimate the number of computers, CRTs, and televisions that will be ready for disposal by US households and businesses in the next 15 years. This model has been used to support electronic producer responsibility and recycling funding proposals in over half of the states and nationally.

Colorado CRT Recycling Study, Colorado Department Of Public Health And Environment, CRT Recycling Pilot Project

Ms Dunmire created a simulation model that estimates the number of CRTs and televisions that will become obsolete and ready for disposal for the next 10 years in Colorado. She researched, collected, and scaled national data for Colorado as well as created the simulation model and presented the results to the CRT Recycling Pilot Project advisory board.

Mercury In Compact Fluorescent Lamps, Natural Resources Defense Council

Ms. Dunmire researched and wrote a report on the health and environmental risks associated with mercury in compact fluorescent lamps (CFLs). This paper was used to develop policy on the proper

disposal of CFLs as well as regulations/policy to encourage manufacturers to reduce or eliminate mercury in their CFL products.

Technical Research Projects And Market Studies, Platts/Esource

Ms. Dunmire completed a series of research projects and technical reports on a variety of topics including residential energy efficiency, energy information services, power outages, and the legal aspects of power aggregation contracts. For these projects, she conducts telephone interviews, researches technical information, analyzes product, market, and other economic trends, and composes a final report for publication.

Representative Presentations and Publications

"Cook Inlet Energy Supply Alternatives Study" Presented at the 2006 South Central Alaska Energy Forum. Anchorage. September 21-22, 2006. Presentation available at: http://www.state.ak.us/aogcc/EnergyForum/EnergyForum2006.shtml.

Coalbed Methane Development in the Intermountain West. Natural Resources Law Center. University of Colorado School of Law, 2002. Case Study: Coalbed Methane in the San Juan Basin of Colorado and New Mexico. Catherine Cullicott, Carolyn Dunmire. Jerry Brown, and Chris Calwell, Ecos Consulting.

Note: the following publications are listed under Ms. Dunmire's maiden name Carolyn Lang.

"The Effect of a Shadow Price on Carbon Emission in the Energy Portfolio of The World Bank: A Carbon Backcasting Exercise". ESM 212. February 1999.

New York State Environmental Externalities Cost Study. R.D. Rowe, C.M. Lang, L.G. Chestnut, D. Latimer, D. Rae, S.M. Bernow, and D. White. Oceana Publications: Dobbs Ferry, NY. December 1995.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
For the SES SOLAR TWO PROJECT

Docket No. 08-AFC-5

PROOF OF SERVICE
Revised 1/27/09

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the Docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-5
1516 Ninth Street, MS-4
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DECLARATION OF SERVICE

I, _____, declare that on _____, I deposited copies of the attached _____ in the United States mail at _____ with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Kimberly S Whitney

Attachments